

**Supplementary Table S1.** The main factors and the interactions of these factors affecting the secretion of LH by the porcine anterior pituitary cells during the estrous cycle (the results of multifactorial analysis of variance)

		FACTORS	F	<i>p</i>
Expt. No. 1	LH secretion	PHASE	$F_{3,512} = 2719.20$	0.00000
		STIMULATION OF CELLS	$F_{3,512} = 353.60$	0.00000
		VIS DOSE	$F_{3,512} = 2.70$	0.04245
		FK866	$F_{1,512} = 0.20$	0.62472
		PHASE*STIMULATION OF CELLS	$F_{9,512} = 105.00$	0.00000
		PHASE*VIS DOSE	$F_{9,512} = 12.90$	0.00000
		STIMULATION OF CELLS*VIS DOSE	$F_{9,512} = 23.90$	0.00000
		PHASE*FK866	$F_{3,512} = 138.90$	0.00000
		STIMULATION OF CELLS*FK866	$F_{3,512} = 120.70$	0.00000
		VIS DOSE*FK866	$F_{3,512} = 1.60$	0.18921
		PHASE*STIMULATION OF CELLS*VIS DOSE	$F_{27,512} = 9.70$	0.00000
		PHASE*STIMULATION OF CELLS*FK866	$F_{9,512} = 32.00$	0.00000
		PHASE*VIS DOSE*FK866	$F_{9,512} = 17.30$	0.00000
		STIMULATION OF CELLS*VIS DOSE*FK866	$F_{9,512} = 18.50$	0.00000
		PHASE*STIMULATION OF CELLS*VIS DOSE*FK866	$F_{27,512} = 6.50$	0.00000

**Supplementary Table S2.** The main factors and the interactions of these factors affecting the secretion of LH by the porcine anterior pituitary cells during the estrous cycle (the results of two-way analysis of variance)

		PHASE OF THE ESTROUS CYCLE	FACTORS	F	<i>p</i>	
<i>Expt.</i> <i>No. 1</i>	LH	basal secretion	early-luteal phase	VIS	F <sub>3,32</sub> = 8.67	0.00024
			early-luteal phase	FK866	F <sub>1,32</sub> = 22.06	0.00005
			early-luteal phase	VIS*FK866	F <sub>3,32</sub> = 5.33	0.00431
			mid-luteal phase	VIS	F <sub>3,32</sub> = 6.64	0.00129
			mid-luteal phase	FK866	F <sub>1,32</sub> = 34.48	0.00000
			mid-luteal phase	VIS*FK866	F <sub>3,32</sub> = 8.09	0.00038
			late-luteal phase	VIS	F <sub>3,32</sub> = 2.18	0.10974
			late-luteal phase	FK866	F <sub>1,32</sub> = 14.53	0.00059
			late-luteal phase	VIS*FK866	F <sub>3,32</sub> = 2.74	0.05957
		follicular phase	VIS	F <sub>3,32</sub> = 7.03	0.00092	
		follicular phase	FK866	F <sub>1,32</sub> = 71.84	0.00000	
		follicular phase	VIS*FK866	F <sub>3,32</sub> = 8.99	0.00018	
		GnRH-simulated secretion	early-luteal phase	VIS	F <sub>3,32</sub> = 39.26	0.00000
			early-luteal phase	FK866	F <sub>1,32</sub> = 180.39	0.00000
			early-luteal phase	VIS*FK866	F <sub>3,32</sub> = 19.68	0.00000
			mid-luteal phase	VIS	F <sub>3,32</sub> = 13.12	0.00001
			mid-luteal phase	FK866	F <sub>1,32</sub> = 14.61	0.00058
			mid-luteal phase	VIS*FK866	F <sub>3,32</sub> = 6.63	0.00131
	late-luteal phase		VIS	F <sub>3,32</sub> = 13.87	0.00001	
	late-luteal phase		FK866	F <sub>1,32</sub> = 95.55	0.00000	
	late-luteal phase		VIS*FK866	F <sub>3,32</sub> = 11.41	0.00003	
	follicular phase		VIS	F <sub>3,32</sub> = 6.57	0.00138	
	follicular phase		FK866	F <sub>1,32</sub> = 66.49	0.00000	
	follicular phase		VIS*FK866	F <sub>3,32</sub> = 9.20	0.00016	
	INS-stimulated secretion		early-luteal phase	VIS	F <sub>3,32</sub> = 6.95	0.00099
			early-luteal phase	FK866	F <sub>1,32</sub> = 27.21	0.00001
			early-luteal phase	VIS*FK866	F <sub>3,32</sub> = 6.98	0.00096
			mid-luteal phase	VIS	F <sub>3,32</sub> = 6.59	0.00135
			mid-luteal phase	FK866	F <sub>1,32</sub> = 24.86	0.00002
			mid-luteal phase	VIS*FK866	F <sub>3,32</sub> = 8.87	0.00020
		late-luteal phase	VIS	F <sub>3,32</sub> = 3.78	0.01980	
		late-luteal phase	FK866	F <sub>1,32</sub> = 11.74	0.00170	
		late-luteal phase	VIS*FK866	F <sub>3,32</sub> = 4.56	0.00907	
		follicular phase	VIS	F <sub>3,32</sub> = 10.80	0.00005	
		follicular phase	FK866	F <sub>1,32</sub> = 111.97	0.00000	
		follicular phase	VIS*FK866	F <sub>3,32</sub> = 16.08	0.00000	
		GnRH+INS-stimulated secretion	early-luteal phase	VIS	F <sub>3,32</sub> = 15.51	0.00000
			early-luteal phase	FK866	F <sub>1,32</sub> = 97.86	0.00000
			early-luteal phase	VIS*FK866	F <sub>3,32</sub> = 14.61	0.00000
			mid-luteal phase	VIS	F <sub>3,32</sub> = 15.11	0.00000
			mid-luteal phase	FK866	F <sub>1,32</sub> = 98.02	0.00000
			mid-luteal phase	VIS*FK866	F <sub>3,32</sub> = 12.54	0.00001
	late-luteal phase		VIS	F <sub>3,32</sub> = 5.84	0.00268	
	late-luteal phase		FK866	F <sub>1,32</sub> = 24.30	0.00002	
	late-luteal phase		VIS*FK866	F <sub>3,32</sub> = 3.63	0.02315	
	follicular phase		VIS	F <sub>3,32</sub> = 22.60	0.00000	
	follicular phase		FK866	F <sub>1,32</sub> = 137.49	0.00000	
	follicular phase		VIS*FK866	F <sub>3,32</sub> = 23.28	0.00000	

**Supplementary Table S3.** The main factors and the interactions of these factors affecting the secretion of FSH by the porcine anterior pituitary cells during the estrous cycle (the results of multifactorial analysis of variance)

		FACTORS	F	<i>p</i>
Expt. No. 1	FSH secretion	PHASE	$F_{3,512} = 1630.39$	0.00000
		STIMULATION OF CELLS	$F_{3,512} = 139.91$	0.00000
		VIS DOSE	$F_{3,512} = 34.66$	0.00000
		FK866	$F_{1,512} = 0.29$	0.83584
		PHASE*STIMULATION OF CELLS	$F_{9,512} = 7.93$	0.00000
		PHASE*VIS DOSE	$F_{9,512} = 76.69$	0.00000
		STIMULATION OF CELLS*VIS DOSE	$F_{9,512} = 9.66$	0.00000
		PHASE*FK866	$F_{3,512} = 0.17$	0.99705
		STIMULATION OF CELLS*FK866	$F_{3,512} = 0.13$	0.94042
		VIS DOSE*FK866	$F_{3,512} = 1.10$	0.34832
		PHASE*STIMULATION OF CELLS*VIS DOSE	$F_{27,512} = 10.73$	0.00000
		PHASE*STIMULATION OF CELLS*FK866	$F_{9,512} = 0.98$	0.45427
		PHASE*VIS DOSE*FK866	$F_{9,512} = 0.32$	0.99969
		STIMULATION OF CELLS*VIS DOSE*FK866	$F_{9,512} = 0.06$	0.99995
		PHASE*STIMULATION OF CELLS*VIS DOSE*FK866	$F_{27,512} = 0.21$	1.00000

**Supplementary Table S4.** The main factors and the interactions of these factors affecting the secretion of FSH by the porcine anterior pituitary cells during the estrous cycle (the results of two-way analysis of variance)

		PHASE OF THE ESTROUS CYCLE	FACTORS	F	p
Expt. No. 1	FSH	early-luteal phase	VIS	F <sub>3,32</sub> = 5.04	0.00569
			FK866	F <sub>1,32</sub> = 5.82	0.02176
			VIS*FK866	F <sub>3,32</sub> = 3.36	0.03076
		mid-luteal phase	VIS	F <sub>3,32</sub> = 2.19	0.10853
			FK866	F <sub>1,32</sub> = 0.02	0.88447
			VIS*FK866	F <sub>3,32</sub> = 1.12	0.35613
		late-luteal phase	VIS	F <sub>3,32</sub> = 0.37	0.77751
			FK866	F <sub>1,32</sub> = 0.48	0.49168
			VIS*FK866	F <sub>3,32</sub> = 0.25	0.85770
	GnRH-simulated secretion	follicular phase	VIS	F <sub>3,32</sub> = 39.11	0.00000
			FK866	F <sub>1,32</sub> = 2.16	0.11170
			VIS*FK866	F <sub>3,32</sub> = 4.00	0.01582
		early-luteal phase	VIS	F <sub>3,32</sub> = 1.72	0.18299
			FK866	F <sub>1,32</sub> = 1.70	0.20181
			VIS*FK866	F <sub>3,32</sub> = 1.04	0.38658
		mid-luteal phase	VIS	F <sub>3,32</sub> = 1.21	0.32047
			FK866	F <sub>1,32</sub> = 2.31	0.13801
			VIS*FK866	F <sub>3,32</sub> = 1.38	0.26540
		late-luteal phase	VIS	F <sub>3,32</sub> = 0.21	0.88617
			FK866	F <sub>1,32</sub> = 0.46	0.50350
			VIS*FK866	F <sub>3,32</sub> = 0.04	0.99097
	INS-stimulated secretion	follicular phase	VIS	F <sub>3,32</sub> = 20.77	0.00007
			FK866	F <sub>1,32</sub> = 2.49	0.07774
			VIS*FK866	F <sub>3,32</sub> = 3.02	0.04396
		early-luteal phase	VIS	F <sub>3,32</sub> = 4.82	0.03550
			FK866	F <sub>1,32</sub> = 0.44	0.72388
			VIS*FK866	F <sub>3,32</sub> = 0.72	0.54750
		mid-luteal phase	VIS	F <sub>3,32</sub> = 1.60	0.20766
			FK866	F <sub>1,32</sub> = 2.30	0.13900
			VIS*FK866	F <sub>3,32</sub> = 1.11	0.36042
		late-luteal phase	VIS	F <sub>3,32</sub> = 6.88	0.01327
			FK866	F <sub>1,32</sub> = 0.07	0.97788
			VIS*FK866	F <sub>3,32</sub> = 0.19	0.90072
	GnRH+INS-stimulated secretion	follicular phase	VIS	F <sub>3,32</sub> = 16.41	0.00030
			FK866	F <sub>1,32</sub> = 1.58	0.21248
			VIS*FK866	F <sub>3,32</sub> = 1.29	0.29609
		early-luteal phase	VIS	F <sub>3,32</sub> = 15.45	0.00043
			FK866	F <sub>1,32</sub> = 1.86	0.15617
			VIS*FK866	F <sub>3,32</sub> = 2.42	0.08469
		mid-luteal phase	VIS	F <sub>3,32</sub> = 2.41	0.08388
			FK866	F <sub>1,32</sub> = 0.71	0.40725
			VIS*FK866	F <sub>3,32</sub> = 1.37	0.27029
		late-luteal phase	VIS	F <sub>3,32</sub> = 0.15	0.92881
			FK866	F <sub>1,32</sub> = 3.73	0.06243
			VIS*FK866	F <sub>3,32</sub> = 0.02	0.99665
		follicular phase	VIS	F <sub>3,32</sub> = 4.05	0.01509
			FK866	F <sub>1,32</sub> = 34.60	0.00000
			VIS*FK866	F <sub>3,32</sub> = 4.21	0.01289

**Supplementary Table S5.** The main factors and the interactions of these factors affecting the proliferation of the porcine anterior pituitary cells during the estrous cycle (the results of multifactorial analysis of variance)

	FACTORS	F	<i>p</i>
<i>Expt.</i> <i>No. 2</i>	PHASE	F <sub>3,128</sub> = 9.90	0,00001
	VIS DOSE	F <sub>3,128</sub> = 68.60	0,00000
	FK866	F <sub>1,128</sub> = 2.00	0,11893
	PHASE*VIS DOSE	F <sub>9,128</sub> = 6.60	0,00035
	PHASE*FK866	F <sub>3,128</sub> = 0.70	0,57493
	VIS DOSE*FK866	F <sub>3,128</sub> = 0.10	0,99953
	PHASE*VIS DOSE*FK866	F <sub>9,128</sub> = 0.10	0,99974

**Supplementary Table S6.** The main factors and the interactions of these factors affecting the proliferation of the porcine anterior pituitary cells during the estrous cycle (the results of two-way analysis of variance)

PHASE OF THE ESTROUS CYCLE		FACTORS	F	<i>p</i>
early-luteal phase		VIS	$F_{3,32} = 22.27$	0.00005
		FK866	$F_{1,32} = 2.26$	0.10066
		VIS*FK866	$F_{3,32} = 2.25$	0.10021
<i>Expt.</i> <i>No. 2</i>	mid-luteal phase	VIS	$F_{3,32} = 14.37$	0.00063
		FK866	$F_{1,32} = 2.23$	0.10321
		VIS*FK866	$F_{3,32} = 1.66$	0.19497
	late-luteal phase	VIS	$F_{3,32} = 10.54$	0.00274
		FK866	$F_{1,32} = 2.57$	0.07150
		VIS*FK866	$F_{3,32} = 1.19$	0.33033
follicular phase		VIS	$F_{3,32} = 23.54$	0.00003
		FK866	$F_{1,32} = 2.35$	0.30809
		VIS*FK866	$F_{3,32} = 1.68$	0.19134

**Supplementary Table S7.** The main factors and the interactions of these factors affecting the apoptosis process in the porcine anterior pituitary cells (the results of two-way analysis of variance)

APOPTOSIS		FACTORS	F	<i>p</i>
the early phase		VIS	$F_{3,32} = 0.28$	0.83850
		FK866	$F_{1,32} = 0.08$	0.78116
		VIS*FK866	$F_{3,32} = 1.63$	0.20123
the late phase		VIS	$F_{3,32} = 0.10$	0.96014
		FK866	$F_{1,32} = 0.14$	0.70632
		VIS*FK866	$F_{3,32} = 1.38$	0.26741
total apoptosis		VIS	$F_{3,32} = 0.18$	0.91039
		FK866	$F_{1,32} = 0.11$	0.73936
		VIS*FK866	$F_{3,32} = 1.56$	0.21742
dead cells		VIS	$F_{3,32} = 0.11$	0.95533
		FK866	$F_{1,32} = 0.80$	0.37754
		VIS*FK866	$F_{3,32} = 0.02$	0.99709

**Supplementary Table S8.** The main factors and the interactions of these factors affecting LH secretion by the porcine anterior pituitary cells after treatment with inhibitors of the INSR, AKT/PI3K, MAPK/ERK1/2, and AMPK signaling pathways (the results of multifactorial analysis of variance)

		FACTORS	F	P
<i>Expt.</i> <i>No. 5</i>	LH secretion	VIS	$F_{1,39} = 1.27$	0.26687
		S961	$F_{1,39} = 0.61$	0.43938
		S961*VIS	$F_{3,39} = 0.09$	0.76708
		LY294002	$F_{1,39} = 0.44$	0.51135
		LY294002*VIS	$F_{3,39} = 0.07$	0.79725
		U0126	$F_{1,39} = 0.83$	0.48781
		U0126*VIS	$F_{1,39} = 0.78$	0.51453
		DMPH	$F_{3,39} = 0.58$	0.63023
		DMPH*VIS	$F_{3,39} = 0.69$	0.56392



**Supplementary Table S9.** The main factors and the interactions of these factors affecting FSH secretion by the porcine anterior pituitary cells after treatment with inhibitors of the INSR, AKT/PI3K, MAPK/ERK1/2, and AMPK signaling pathways (the results of multifactorial analysis of variance)

		FACTORS	F	<i>p</i>
<i>Expt.</i> <i>No. 5</i>	FSH secretion	VIS	F <sub>1,39</sub> = 4.93	0.03218
		S961	F <sub>1,39</sub> = 3.74	0.06011
		S961*VIS	F <sub>3,39</sub> = 5.07	0.00455
		LY294002	F <sub>1,39</sub> = 0.33	0.57180
		LY294002*VIS	F <sub>3,39</sub> = 2.80	0.05236
		U0126	F <sub>1,39</sub> = 0.04	0.83670
		U0126*VIS	F <sub>3,39</sub> = 4.30	0.04457
		DMPH	F <sub>1,39</sub> = 2.46	0.07677
		DMPH*VIS	F <sub>3,39</sub> = 4.93	0.00522

The purity of the anterior lobe collection is assured by the fact that the anterior and posterior lobes of the porcine pituitary are morphologically distinct tissues, as confirmed by microscopic examination:

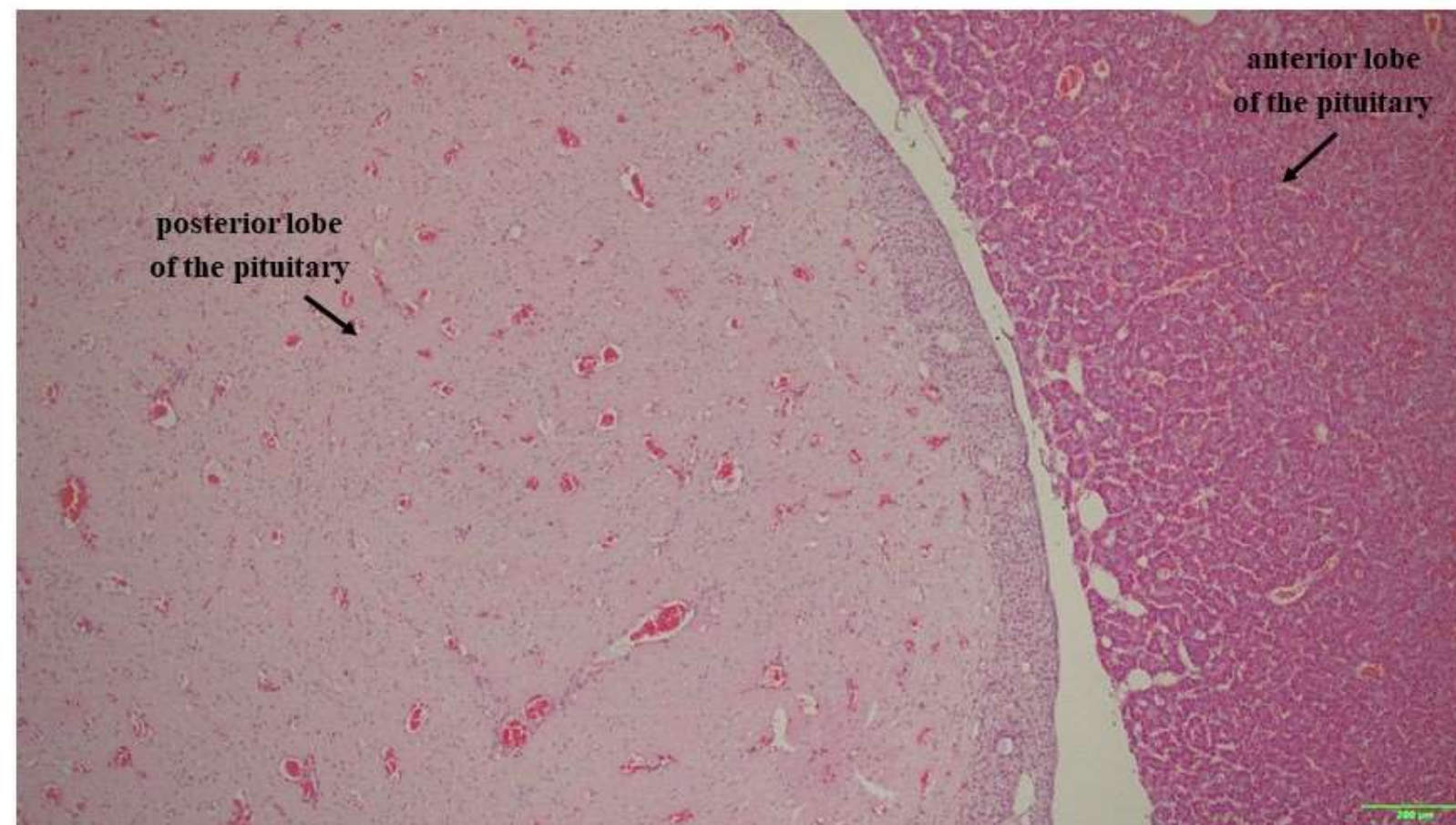
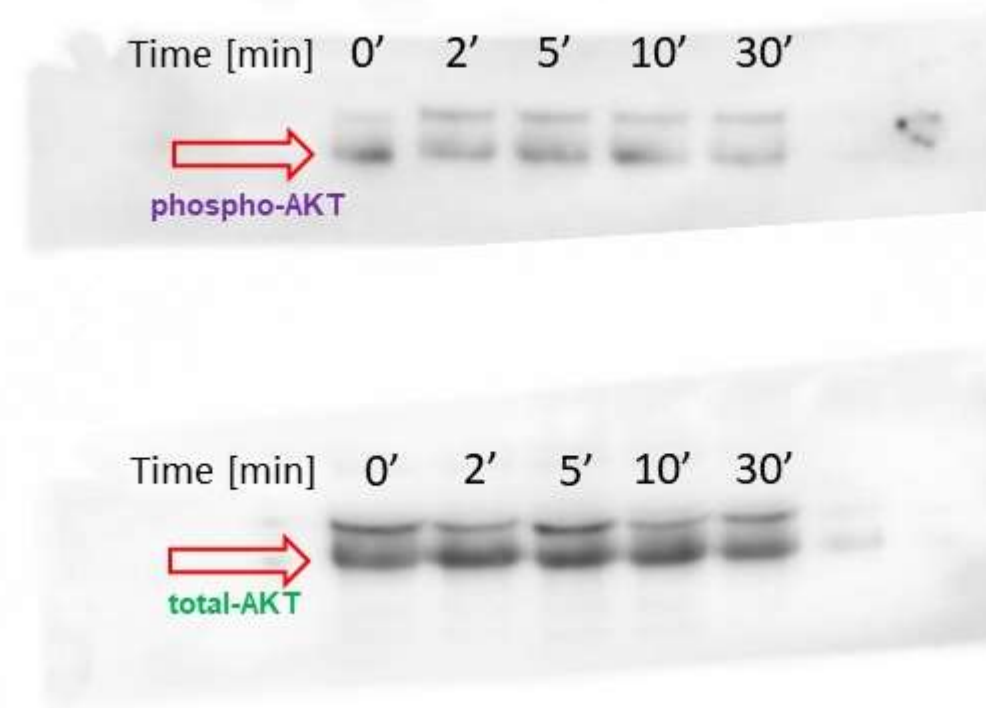
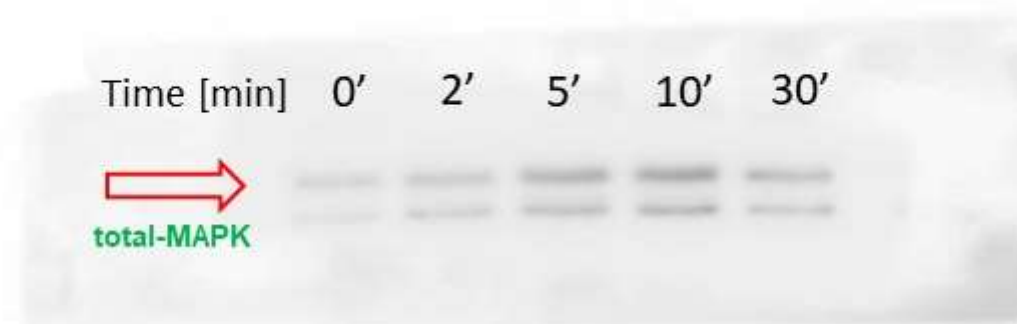
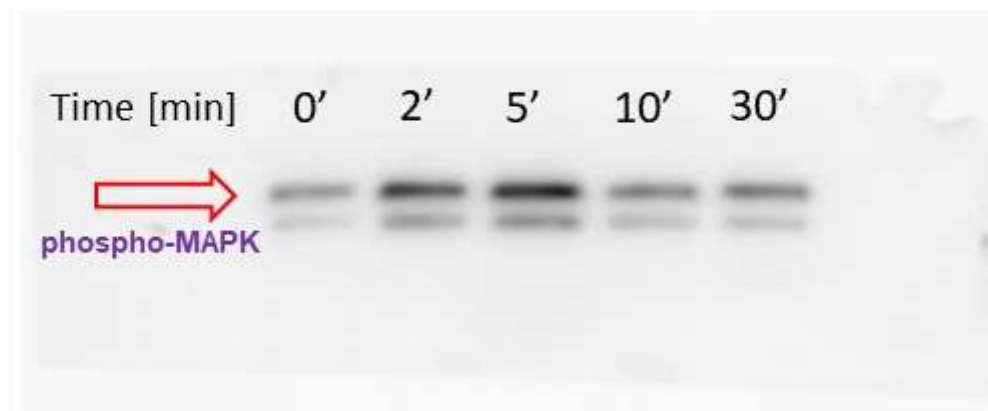


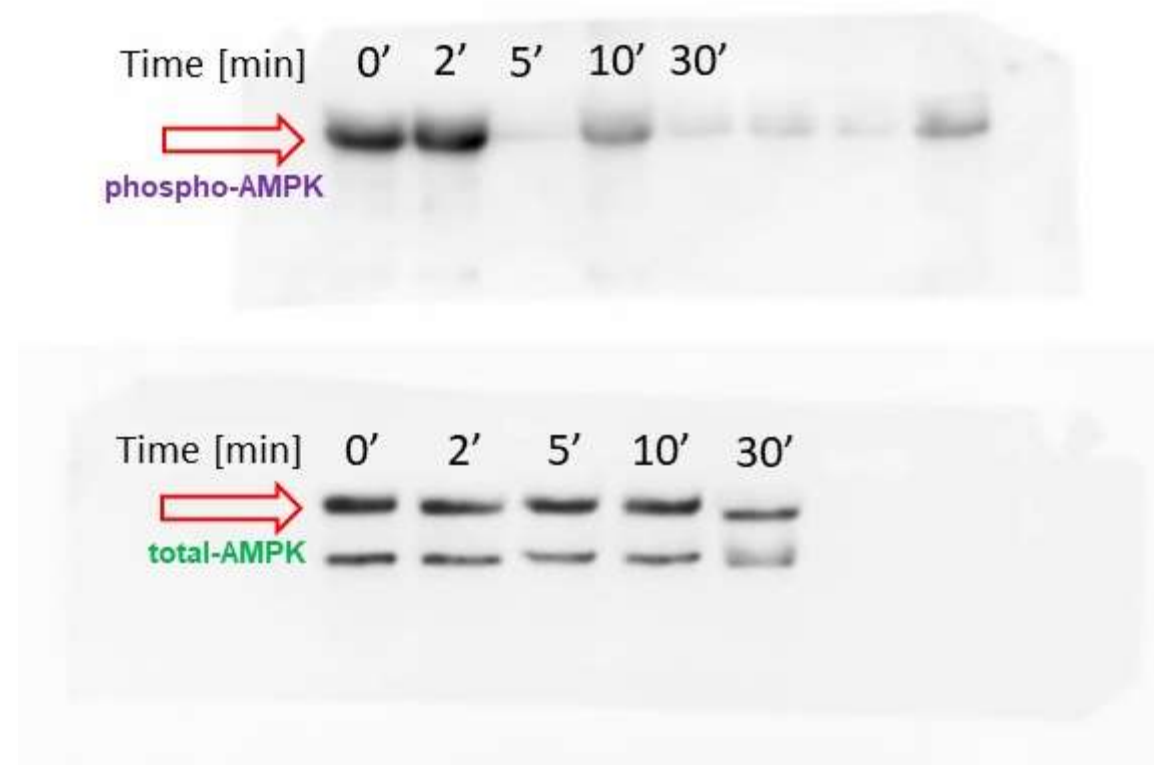
Figure shows the anterior and posterior lobes of the normal pituitary gland of the pig, x4.  
**Supplementary Figure S1.** H&E staining of anterior and posterior pituitary.



**Supplementary Figure S2.** The in vitro effect of visfatin on the activation of the AKT/PI3K signalling pathways in the porcine anterior pituitary cells.



**Supplementary Figure S3.** The in vitro effect of visfatin on the activation of the MAPK/ERK1/2 signalling pathways in the porcine anterior pituitary cells.



**Supplementary Figure S4.** The in vitro effect of visfatin on the activation of the AMPK signalling pathways in the porcine anterior pituitary cells.